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Enrollment Levels in Institutions of Higher Education:

Are State Lotteries Making a Difference in Dixie?

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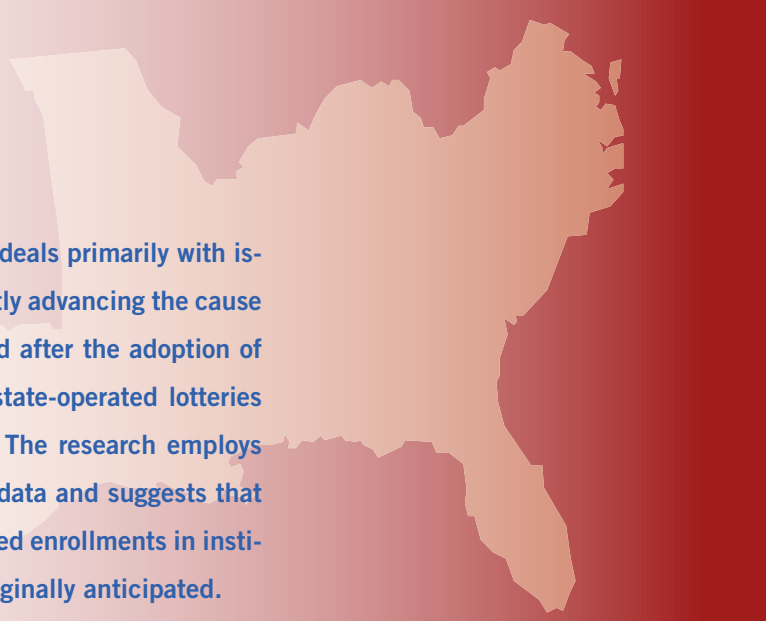
Abstract

Academic literature regarding state lotteries' impact on education deals primarily with issues of funding, rather than searches for evidence of lotteries directly advancing the cause of higher education, by measuring enrollment numbers before and after the adoption of a state lottery. This study fills this void by researching whether state-operated lotteries increase the number of higher education students in the South. The research employs pooled time-series, cross-sectional regression analysis to test the data and suggests that state-operated lotteries are not significantly correlated with increased enrollments in institutions of higher education, as many practitioners and scholars originally anticipated.



Introduction

Since its inception in the early 1970s, researchers, scholars, legislators, and citizens have been debating the value of the legalization of gambling for enhancing state revenues. Often times, theorized positive effects were outweighed by actual negative effects. For example, past researchers found that gaming was a less reliable source of income than taxes on labor income (Rodgers and Stuart, 1998), and that low-income interest groups either bore more of the tax burden or they received fewer benefits from gaming's implementation than citizens in other income groups (Borg, Mason and Shapiro, 1971; Livernois, 1997; Thomas and Webb, 1984; Clotfelter and Cook, 1989). Additionally, governments and citizens experienced unwanted problems and consequences, including increased unemployment, decreased retail competition, increased public debt, and increased crime (Goodman, 1995; Pable, 1996; Gross, 1998).

However, others still contend that gaming has a direct relationship to state wealth and federal spending for public education enhancement (French and Stanley, 2005; Stanley, 2005). Many attest that contributions from lotteries earmarked for social intervention programs, such as education, assist in eradicating the many disparities in the program funding that exists across these states (French and Stanley, 2004). Other studies show that proceeds from legalized gaming replace state monies previously dedicated to social programs such as education (French and Stanley, 2001a). Allocations of these state funds are often related to the political pressures and cultures that exist within the states.

Studies measuring the effects of lottery outcomes on institutions of higher education are surprisingly absent from both historic and recent literature. The argument is whether institutions of higher education (in lottery states) are witnessing a dramatic increase in the number of students attending state universities, and, if so, what the results may be (i.e., a potential influx of students too large for the state infrastructure). This study reviews past literature and conducts original research to conclude whether state-operated lotteries increase the number of higher-education students in the South.

State Lotteries

Lotteries are appealing mechanisms for producing supplemental government revenue because legislators consider them a voluntary tax—individuals pay the tax because they want to, instead of because the government demands it (Mikesell, 2001). The voluntary aspects of lotteries are extremely appealing to governors and legislators because resources for social intervention programs are generated without unpopular tax increases. The allure of lotteries and other forms of gambling as a source of revenue enhancement for state and local governments is made apparent by the continued emergence of legalized gambling over the past two decades. Currently, 38 states and the District of Columbia operate lotteries.

In the 1980s, the intent of legalized gambling was to raise revenues without increasing the tax burdens of the lower class (Mikesell, 1989). From 1982 to 1990, expenditures on legalized gaming increased at almost two times the rate of income; and 1992 revenues from state-sanctioned gambling operations averaged approximately $30 billion a year (Gross, 1998). However, while many used good intent and past success to tout lotteries as a means of increasing funds for needy state programs, opponents contended that lotteries were not the economic savior that policy makers and voters originally thought (Jones and Amalfitano, 1995). Miller and Pierce (1997) examined the financial aspects of education lottery's short-term and long-term effects. They found that state-sponsored lotteries increased spending on education per capita during the early years of the lottery, but as time passed, these same states witnessed an overall decrease in spending for education.

In many states, lottery profits are earmarked for education, economic development, distressed cities and towns, or senior citizen programs. In others, these profits fall into the general fund and may be directed to various programs as prescribed by the state legislature.

The second major problem with lotteries and education funding is that the sources are not fungible (capable of being interchanged) (Spindler, 1995; Garrett, 2001; Campbell, 2003; Mikesell and Zorn, 1986). If lottery profits are utilized to replace original funding from the states, citizens may not reap any benefits, and their present circumstances may actually worsen. In many states, lottery profits are earmarked for education, economic development, distressed cities and towns, or senior citizen programs. In others, these profits fall into the general fund and may be directed to various programs as prescribed by the state legislature (Samuel, 2002; Campbell, 2003; Garrett, 2001; Erekson, Deshano, Platt, and Ziegert, 2002). Spindler attributes the issue of fungibility to the "politics of the budgetary process" because education expenditures are highly visible to the public and are plagued with fiscal and political restraints (60).

Legalized gambling, however, has provided benefits to state and local residents that may not have been realized through any other means. In the 1990s, lottery profits in Georgia, Florida and Kentucky were earmarked for education, allowing younger residents in these states to attend state universities or colleges in full or partial scholarships (Barry, 1995). Also, the educational systems of these states used profits from lotteries to enhance the support network of computers, satellite dishes and media technology in state schools.

A third major problem with lotteries occurs when the proceeds are used to finance a tax cut. Often times, tax cuts occur because a surplus of revenue exists from the lottery (Ereckson, et al., 1999). Governors and legislators realize that increased state spending on programs that enhance the welfare of their constituents will greatly increase their political support. Rodgers and Stuart (1995) stipulate that "the revival of lotteries," despite immoral concerns and "negative distributional effects," occurs because of the belief that lotteries, instead of other tax instruments, raise additional revenue by generating smaller efficiency losses than other taxes; therefore, lotteries are less painful to voters (244). In turn, because tax cuts are highly favorable political platforms, political leaders will endorse tax cuts and replace the lost revenue with lottery dollars, rather than using those lottery dollars to advance education. Unfortunately, past researchers have shown that social intervention programs, such as public education, were the first to suffer so politically ambitious individuals could maintain their tenure in politics (Jones and Amalfitano, 1994).

Education Finance

Education, according to the National Center for Education Statistics, accounts for the single largest expense in most state and local government operating budgets (U.S. Department of Education, 1998). Generally, the money comes from a combination of local and state taxes, federal grants-in-aid programs, and sales taxes; but the balance between these sources has shifted considerably over the years. Local tax revenues consist almost entirely of property taxes and sales taxes, and, despite their regressiveness, these taxes have maintained continued popularity as revenue generating devices (U.S. Department of Education, 1998). As a result of educational incongruity, however, the utilization of revenues for generating educational monies has received immense criticism in the late 20th century.

A wide range of disparity between school districts exists within many states because of taxable wealth (gross state product) and tax rates. Some states possess capacious gross state products, while other states exhibit feeble levels of wealth. Further exacerbation of wealth disparity between school districts exists because of imbalances in the distribution of commercial, industrial, utility, public, tax-free, and residential property, as well as an uneven distribution of school-aged children. Statistical evidence provided by the Department of Education (2004) certifies numerous accounts of educational disparity across America. In most states, the average spending disparity between affluent and less affluent school districts ranges from two and five times more. Numerous court challenges to the constitutionality of property-based education finance have occurred in almost every state over the last 10 years, and the supreme courts in 17 states have declared the current systems of education finance in these states unconstitutional (Dee, 2004).

Some past proponents of education funding have claimed that gross inadequacies exist between wealthy school districts and poor school districts as a result of the outdated funding mechanisms employed by states and localities for decades (Picas, 1995). Others contended that the U.S. currently spends more than ever on education, and the achievement scores were

stagnant, and in some cases, had even declined (Hanushek, 1994). Despite pious efforts toward eradicating these financial disparities, the fact remained that within virtually every state, funding levels for some children's education were several times greater than those of other children (Renchler, 1992).

The perennial social problem of educational expenditure disparity is often attributed to the failure of elected officials to adopt legislation to confront this issue. Historically, reports demonstrate that Republican governors tend to support less spending on education compared to Democratic governors. However, many Republican governors are witnessing the desperate need to enhance America's educational system, especially since the U.S. is aggressively competing in a global economy (Beyle, 1996). Governors recognize that raising taxes in an effort to cover the educational expense of states is politically counterproductive. Therefore, governors representing both parties have been and are currently searching for ways to increase revenue allotments for public education without increasing taxes (Picas, 1995). The lottery is one of the mechanisms governors often explore to cover these social expenses. Governors, especially during election years, find the lottery quite appealing because it allows them to spend more on social programs, such as education, without embracing a tax increase for these expenditures.

According to Pierce and Miller (1999), education and general fund politics are the issues being used to sell lottery adoption in the states. States adopting lotteries for curing the education "crisis" in America, instead of generating revenue for general fund "needs," met less opposition from fundamentalists because the symbol that their children's education was at stake is a symbol they were not willing to risk (Pierce and Miller, 1999). Therefore, somewhere between dedicating lottery proceeds for education, instead of the general fund, state-operated lotteries have become less "sinful."

Academic literature regarding state lotteries' impact on education deals primarily with issues of funding, rather than searches for evidence of lotteries directly advancing the cause of higher education, by measuring enrollment numbers before and after the adoption of a state lottery. This study fills this void by researching whether state-operated lotteries increase the number of higher education students in the South and determining if associated assertions have any credence. In this study, the South is defined by using V.O. Key, Jr.'s definition of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia, and Missouri, with the exceptions of Tennessee and South Carolina, which researchers categorized as non-lottery states due to their recent adoption of the lottery in 2002 and 2003.

Methods

Researchers evaluated the impact of several variables concerning enrollment levels at higher education institutions, including federal education spending, gross state product, lottery revenues, lottery presence, population, governor's political party, governor's election year, unemployment percentage, higher education spending, and poverty. The unit of analysis in the study was state-level data from 1970 to the year 2000 (30-year time period). Researchers used pooled time-series, cross-sectional data analysis to evaluate the relationship between higher education enrollment levels and the independent variables. The estimated regression equation is written as follows:

$$Y\ (\text{TOTALHIGH})_{t-1} = a + (B_1)\text{GSP}_1 + (B_2)\text{FEDSPEDU}_2 + (B_3)\text{LOTTERY}_3 + (B_4)\text{LOTTERY PRESENCE}_4 + (B_5)\text{GOVPARTY}_5 + (B_6)\text{GOVELECT}_6 + (B_7)\text{POPULATION}_7 + (B_8)\ \text{UNEMPLOYMENT}_8 + (B_9)\ \text{SPHIGHEDU}_9 + (B_{10})\ \text{POVERTY}_{10} + E$$

Finding and Discussion

The impact of lottery adoption and other variables on enrollment at institutions of higher education was evaluated in several models. (See Tables 1–5.) The dependent variable of enrollment level included enrollment at both four-year institutions and two-year institutions taken together. The data also included four-year institution enrollment and two-year institution enrollment separately. Population was found to be statistically significant in all three models (see Tables 1–3), while the unemployment variable had a statistically significant impact (see Table 2) on enrollment levels at four-year institutions only. States with higher populations tended to have higher enrollments at both two- and four-year institutions of higher education when compared to states with lower populations. Also, states with higher levels of unemployment tended to have a higher level of enrollment of students in higher education at four-year institutions ($t=2.269$, $p<0.05$). Enrollment levels could not be significantly linked to resources for higher education, gross state product, federal funding of education, political party of the governor, election year of the governor, nor poverty level.

In addition to measuring the impact of lotteries on enrollment figures among southern states, the researchers also analyzed the impact of lotteries on SAT scores. One argument proposes that some states, Georgia specifically, have witnessed an increase in SAT scores among freshmen entering state universities. This notion suggests that the quality of students entering institutions of higher education in lottery states may have increased. In an effort to measure this assumption, researchers constructed regression models for the both the math and verbal sections of the SAT from 1974 to 2000 with the same independent variables used to analyze higher education enrollment levels. Only the poverty-level variable demonstrated a statistically-significant relationship (see Tables 4 and 5) to verbal and math SAT scores of students enrolled in institutions of higher education. The data suggested

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that a decrease in poverty level resulted in an increase in the SAT score of college students. None of the other variables were significantly related to SAT scores. The analyses failed to demonstrate that the quality of students among lottery states in the South has improved as a result of the adoption of a state lottery. However, both models suggested that states with lower poverty levels witness higher SAT scores.

Previous literature suggests that enrollment at postsecondary institutions should benefit from state implementation of a lottery. Barry (1995) points out that lottery profits in Georgia in 1995 produced $85 million in scholarships and allowed more than 100,000 Georgia high school graduates to receive postsecondary education. Profits from this state's lottery have helped high school students with a "B" average receive free tuition at in-state colleges and universities. As a result, this scholarship fund has improved the standards within the Georgia university system, and encouraged more students to attend college in-state. Similar residential scholarship programs are found in Florida and Kentucky. Students who meet certain GPA and SAT score requirements receive funds from lottery proceeds to attend colleges and universities in these states. In many circumstances, a state's best and brightest students are staying "at home" to obtain their postsecondary education. However, this study demonstrates that the overall number of students in a lottery state seeking postsecondary education has not increased as a result of lottery adoption.

Policy Implications and Limitations

The pros and cons expressed in the academic literature concerning state institutions of higher education experiencing unprecedented levels of increased enrollment, as a result of the lottery, have failed to gain support in this study. This analysis suggests that one significant factor for increasing enrollment in institutions of higher education is simply the population of the state. Another factor is unemployment level. However, the idea that lotteries increase the quality of students entering institutions of higher education remains unconfirmed. The data suggest that the lotteries have no significant impact on enrollment levels in institutions of higher education, and that SAT scores have not significantly increased as a result of this revenue-generating device.

One limitation of this study results from grouping all the southern states into one lottery study. For example, the disbursement of lottery funds is different from state to state. Georgia may spend a majority of its funds on programs such as the Hope Scholarship for higher education, whereas other states may spend some revenues on higher education and some proceeds on public safety and transportation. As a result, some states may cancel out the effect of Georgia's lottery in the model, failing to reveal that enrollment increases do exist, when in fact specific case studies may provide more reliable data. Specific studies measuring the impact of lotteries on a state-by-state basis may provide a better assessment of the impact that lotteries have on enrollment levels in institutions of higher education.

Future studies should focus on the specific number of students receiving lottery scholarships in higher education. For instance, once the administrative costs of higher education lotteries are deducted, is there a significant difference between the number of students receiving lottery scholarships and those not receiving money from the lottery to attend school? Additionally, are the number of professors and their salaries increasing as a result of the lottery? Future studies regarding these issues would fill a gap and lend credibility to the literature currently available on state operated lotteries and their impacts on institutions of higher education.

Table 1
All Students

	B	t-test	p.<
GSP	.00202	.328	.743
FEDSPEDU	-.00359	-.423	.673
LOTTERY	-45.249	-1.409	.160
LOTTERY PRES.	-24752.0	-.537	.592
GOVPARTY	-17292.8	-.845	.399
GOVELECT	955.962	.043	.966
Population	48.153	14.055	.001*
UNEMPLOYMENT	3653.86	.732	.465
SPHIGHEDU	7.766	.594	.553
Poverty Level	-1001.5	-1.047	.295
Constant	-41480.10	-.496	.620
R	.874		
R2	.787		
AdjR2	.776		
Df	9		
F	37.536		
F(sig)	.001		
N =	415		
Note: * significance at .001			

Table 2
Students Enrolled In Four-Year Institutions

	B	t-test	p.<
GSP	-.000660	-.606	.545
FEDSPEDU	.002328	1.553	.121
LOTTERY	-11.258	-1.888	.058
LOTTERY PRES.	-14716.3	-1.809	.071
GOVPARTY	-2624.14	-.727	.468
GOVELECT	-5309.17	-1.353	.177
Population	18.386	30.426	.001**
UNEMPLOYMENT	1997.7	2.269	.024*
SPHIGHEDU	2.492	1.081	.280
Poverty Level	-389.107	-1.707	.088
Constant	15887.0	1.077	.282
R	.895		
R2	.802		
AdjR2	.797		
Df	9		
F	181.859		
F(sig)	.001		
N =	415		
Note: ** significance at .001; *significance at .05			

Table 3
Students Enrolled In Two-Year Institutions

	B	t-test	p.<
GSP	.00409	1.172	.248
FEDSPEDU	-.00250	-1.406	.161
LOTTERY	7.576	1.127	.261
LOTTERY PRES.	1938.4	.201	.841
GOVPARTY	-3599.7	-.840	.401
GOVELECT	-2745.8	-.589	.556
Population	19.439	27.102	.001*
UNEMPLOYMENT	1686.8	1.614	.107
SPHIGHEDU	4.598	1.680	.094
Poverty Level	-361.5	-.595	.552
Constant	-59746.2	-3.413	.001
R	.891		
R2	.793		
AdjR2	.789		
Df	9		
F	172.759		
F(sig)	.001		
N =	415		
Note: * significance at .001			

Table 4
Verbal SAT Scores of Students Enrolled In Institutions of Higher Education

	B	t-test	p.<
GSP	.05639	.405	.686
FEDSPEDU	.05550	1.750	.080
LOTTERY	.05108	1.003	.316
LOTTERY PRES.	-.169	-.032	.975
GOVPARTY	-3.528	-.927	.354
Population	-.0604	-1.209	.227
UNEMPLOYMENT	.325	.324	.746
SPHIGHEDU	8.096	1.877	.061
Poverty Level	-1.387	-3.039	.001*
Constant	88.546	8.548	.001
R	.904		
R2	.818		
AdjR2	.816		
Df	9		
F	710.733		
F(sig)	.001		
N =	312		
Note: * significance at .001			

Table 5

Math SAT Scores of Students Enrolled In Institutions of Higher Education

	B	t-test	p.<
GSP	.01203	.056	.955
FEDSPEDU	.09188	1.656	.091
LOTTERY	.04603	.325	.746
LOTTERY PRES.	-.211	-.018	.985
GOVPARTY	-.108	-.015	.988
Population	-.0137	-1.178	.239
UNEMPLOYMENT	2.694	1.173	.212
SPHIGHEDU	10.794	1.445	.149
Poverty Level	-3.595	-4.419	.001*
Constant	112.148	5.563	.001
R	.911		
R2	.829		
AdjR2	.826		
Df	9		
F	273.961		
F(sig)	.001		
N =	312		
Note: * significance at .001			

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